

09/779,286 has been canceled without prejudice, and replacement claims have been added.

New Claims 21 to 30 are directed to Applicants' novel, integrated processes which include (a) providing an organic feedstock consisting essentially of material boiling between about 75° C. and about 425° C. comprising a mixture of sulfur-containing, nitrogen-containing and other organic compounds derived from natural petroleum by processes that include reacting a petroleum distillate consisting essentially of material boiling between about 50° C. and about 425° C. with a source of hydrogen at hydrogenation conditions in the presence of a hydrogenation catalyst to assist by hydrogenation removal of sulfur and/or nitrogen from the petroleum distillate; (b) partitioning by distillation the organic feedstock to provide at least one low-boiling organic part consisting of a sulfur-lean, mono-aromatic-rich fraction, and a high-boiling organic part consisting of a sulfur-rich, mono-aromatic-lean fraction; (c) contacting a gaseous source of dioxygen with at least a portion of the low-boiling organic part in a liquid reaction medium containing a heterogeneous oxygenation catalyst system which exhibits a capability to enhance the incorporation of oxygen into a mixture of liquid organic compounds and comprises one or more catalyst metal selected from the group consisting of vanadium, chromium, molybdenum, tungsten, bismuth manganese, iron, cobalt, nickel, palladium, platinum, copper and silver, while maintaining the reaction medium substantially free of halogen and/or halogen-containing compounds, to form a liquid mixture comprising hydrocarbons, oxygenated organic compounds, water of reaction, and acidic co-products; (d) separating from the mixture at least a first organic liquid of low density comprising hydrocarbons, oxygenated sulfur-containing, oxygenated nitrogen-containing and other oxygenated organic compounds and acidic co-products and at least portions of the catalyst metal, water of reaction and acidic co-products, and a second separated liquid which is an aqueous solution containing at least a portion of the oxidized sulfur-containing and/or nitrogen-containing organic compounds; (e) and contacting all or a portion of

the separated organic liquid with a neutralizing agent thereby recovering a low-boiling oxygenated product having a low content of acidic co-products.

Support for Claims 21 to 30 is found in the specification and original claims of parent Application Serial No. 09/779,286.

5           Attention of Examiner is invited to Example 1, at pages 38 and 39 of the Specification, wherein Applicants demonstrate that after a refinery distillate containing sulfur at a level of about 500 ppm was hydrotreated under suitable conditions, the produce hydrodesulfurized distillate containing sulfur at a level of about 130 ppm. Furthermore, even under the more severe conditions of  
10 hydrotreatment (which increases the loss of desirable aromatic compounds) demonstrated in Example 2, the hydrodesulfurized distillate still containing sulfur at a level of about 15 ppm.

Also shown in Example 2, is that partitioning by distillation in accordance with this invention of the hydrodesulfurized distillate containing sulfur at a level of  
15 about 15 ppm advantageously provided a sulfur-lean, mono-aromatic-rich fraction and a sulfur-rich, monoaromatic-lean fraction.

In Examples 5 to 7, at pages 41 and 42 of the Specification, Applicants demonstrate that a desirable oxygenation of a hydrocarbon compounds and simultaneous reductions of sulfur and nitrogen levels, were accomplished by  
20 contacting a gaseous source of dioxygen with hydrotreated refinery distillates in accordance with the invention.

This hydrotreated distillate had a gravity of 35° API. Analysis of the distillate gave 20 ppm of sulfur, 18 ppm of nitrogen. As reported in Example 5, analyses of the product of oxidation determined a sulfur content of 13 ppm, a  
25 nitrogen content of 2 ppm, and a total acid number of 0.7 mg KOH/g. Oxygenation of the treated hydrocarbon distillate was 1.01 percent by weight.

As reported in Example 6, analyses of the product of oxidation determined a sulfur content of 9 ppm, a nitrogen content of 8 ppm, and a total acid number of 2.89 mg KOH/g. Oxygenation of the treated hydrocarbon distillate was 1.01 percent by weight.

- 5 As reported in Example 7, analyses of the product of oxidation determined a sulfur content of 6 ppm, a nitrogen content of 9 ppm, and a total acid number of 7.77 mg KOH/g. Oxygenation of the treated hydrocarbon distillate was 2.45 percent by weight,

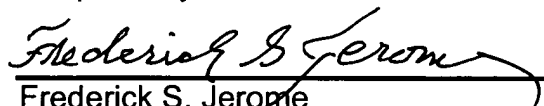
10 In view of such experimental results, Applicants urge that Claims 21 to 30, all claims now presented, are in condition for allowance. Applicant respectfully requests Examiner to pass subject application for allowance.

Do not hesitate to contact Frederick S. Jerome whose telephone number is (630) 832-7974 (FAX (630) 832-7976) if additional assistance is needed regarding this paper or earlier papers for Applicants.

- 15 Applicants and their undersigned Attorney appreciate Examiner's attention and consideration of this matter.

Respectfully submitted,

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